Eteone lighti

A paddleworm

Phylum: Annelida
Class: Polychaeta
Order: Phyllodocida
Family: Phyllodocidae

Taxonomy: The genus *Eteone* was revised into three genera (*Eteone*, *Hypereteone*, *Mysta*) by Wilson (1988) based on anal cirri morphology and the presence and location of proboscis papillae. Thus, *E. lighti* is sometimes referred to as *Hypereteone lighti*. While the presence of three major groups are apparent, splitting *Eteone* into these genera has not been recognized by most authors and *E. lighti* is the name most commonly seen (Pleijel 1991; Blake 1992; Blake 1997; Blake and Ruff 2007).

Description

Size: Individuals to 30 mm in length and 1–1.5 mm in width (Hartman 1968). A 25-mm long Coos Bay specimen weighed 0.17 g (wet weight, Baker et al. 1970).
Color: Pale or white, deep yellow dorsal transverse stripes (Hartman 1968) and dorsal cirri with deep yellow tips.
General Morphology: Body long and slender that gradually tapers posteriorly in the illustrated specimen (Fig. 1) and is recognizable by trapezoidal prostomium and triangular dorsal cirri (Blake and Ruff 2007).
Body: 75-100 total body segments (Fig. 1) where first segment incomplete dorsally (*Eteone*) and expands into tentacular cirri (Fig. 2a).

Anterior: Prostomium wider than long and with a median longitudinal groove (Fig. 2a). Anterior bears several paired appendages (see **Anterior appendages**) but no nuchal papilla.
Trunk:
Posterior: A single pair of cirriform anal cirri are attached laterally (Figs. 1, 5) and are approximately twice as large as tentacular cirri (Fig. 2).

Parapodia: Uniramous with neuropodia only. All but first segment with a flat triangular dorsal cirrus, about as wide as long (Fig. 3), these become longer and narrower posteriorly. The ventral cirrus has a broad base tapering to a blunt tip and is shorter than the neuropodial lobe (Fig. 3). Note: parapodium should be examined in side view to check for flatness, inflatedness, etc.
Setae (chaetae): Setae are compound (Phyllodocidae, Blake 1975b) and consist of long, fine, colorless spinigers (Hartman 1968) (Figs. 4a,b).
Eyes/Eyespots: Two eyespots are present on posterior third of the prostomium (Fig. 2a).
Anterior Appendages: Prostomium bears two pairs of short, conical antennae and appendages on the first segment include two pairs of short and slender tentacular cirri (*Eteone*) (Fig. 2a).
Branchiae:
Burrow/Tube:
Pharynx: Pharynx bears proboscis that can be smooth or wrinkled, but lacks papillae (Hartman 1968) (Fig. 1).
Genitalia:
Nephridia:

Possible Misidentifications

Phyllodocids can have flattened, globular, leaf- or paddle-like parapodial cirri (Blake 1975b). The family Phyllodocidae is characterized by individuals that are long and slender and a prostomium that usually bears four antennae (and occasionally a medial one). Additionally, they have 2–4 pairs of tentacular cirri, uniramous parapodia and compound setae. Other polychaete families with similar morphology are Syllidae and Nereidae, although neither has uniramous parapodia. Phyllodocid genera are differentiable by a "tentacular formula" which combines important taxonomic characters including the arrangement of tentacular cirri, the fusion of tentaculate

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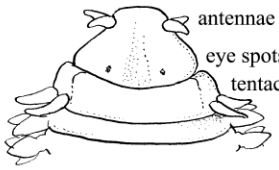
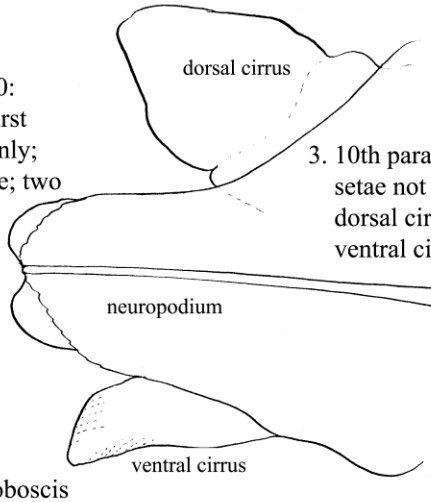
Eteone lighti

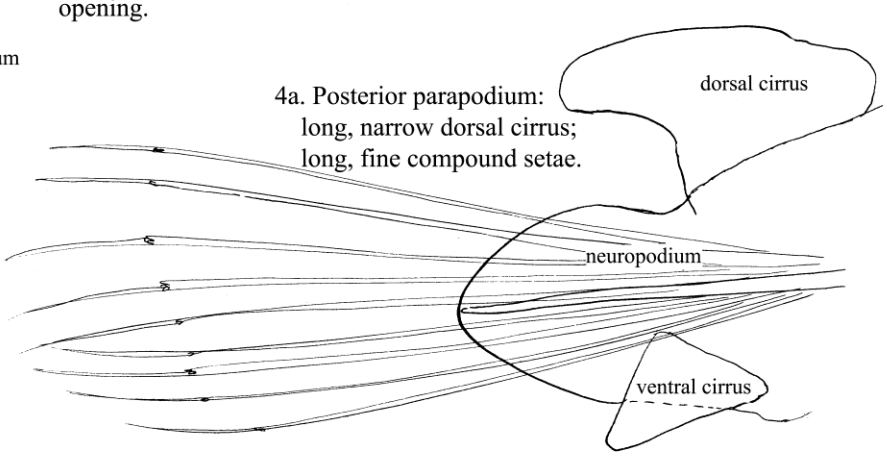


2a. Prostomium (dorsal view) x30: trapezoidal, wider than long; first segment with tentacular cirri only; two pairs short frontal antennae; two eyes, medial groove.

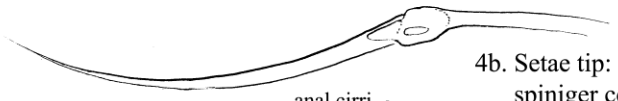
2b. Prostomium (ventral view) x30: showing proboscis opening.



3. 10th parapodium: setae not shown, triangular dorsal cirrus; brood-based ventral cirrus.



4a. Posterior parapodium: long, narrow dorsal cirrus; long, fine compound setae.



4b. Setae tip: spiniger compound, fine-bladed.

1. *Eteone lighti* proboscis, everted x12: prominent uniramous parapodia; proboscis without papillae.

5. Anal cirri x30: one pair.

segments and the occurrence of setae on those segments (Blake and Ruff 2007). The genus *Eteone* has only two pairs of short tentacular cirri and short prostomial antennae (Fauchald 1977) (Fig. 2a).

The species most similar to *E. lighti* in our area is *E. pacifica*, which has no (or inconspicuous) eyes, a prostomium longer than wide, flat broadly rounded asymmetrical dorsal cirri and irregularly spaced black spots on its yellowish body. Individuals are large and can be more than 100 mm in length (Blake and Ruff 2007). A variety, *E. p. spetsbergensis*, has parapodial setae with two large, equal teeth at the end of the shaft (*E. pacifica sensu stricto* has setae with two unequal teeth at the end of the shaft) (Banse and Hobson 1974).

Other species of *Eteone* include *E. californica,* which also has a broad truncate prostomium, but has a nuchal papilla between its dark red eyes, and wide, dorsal parapodial cirri. Its ventral cirri are very short in the posterior parapodia, it has small brown pigment spots on its body (Banse and Hobson 1974), which comprises 80-95 total segments. *E. californica* is slightly smaller than *E. lighti* at 20 mm in length, on average, and the setae in *E. californica* have a pair of large teeth with 4–5 denticles on shaft tip (Blake 1997). *E. dilatae* is a long, slender worm with up to 250 segments and is found on sandy beaches of the outer coasts in central and southern California (Hartman 1936; Blake and Ruff 2007). *E. dilatae* is pale green in body color and characterized by a long prostomium and sub-rectangular dorsal cirri (Blake and Ruff 2007). *E. balboaensis* is a rare and eyeless species from southern California (Hartman 1936). *E. longa*, found in the Puget Sound literature, but not in guides from California and Oregon (Blake and Ruff 2007), has a long, symmetrical conical dorsal cirrus, and a ventral cirrus almost as long as the parapodial lobe; its anal cirri are broad and spheroidal (Banse and Hobson 1974; Kozloff 1974).

Ecological Information

Range: Type locality is San Francisco Bay, California. Known range includes central and southern California extending into Oregon, but probably not to Washington (Hartman 1968; Blake and Ruff 2007).
Local Distribution: Coos Bay sites include South Slough, particularly northern sites (Porch 1970).
Habitat: Mudflats, preferring muddy sand (in Coos Bay, Porch 1970; Blake and Ruff 2007).
Salinity: Collected in Coos Bay in South Slough at salinities ranging from 20–30 (Baker et al 1970).
Temperature:
Tidal Level:
Associates: Common amongst eelgrass.
Abundance: *E. lighti* can be one of the most common and widespread mudflat worms in the upper Coos Bay. Specifically in South Slough, abundances were measured at up to several hundred individuals/m^2 (Porch 1970).

Life-History Information

Reproduction: Many benthic polychaetes, including phyllodocids, can reproduce via epitoky, where all or a portion of the worm transforms into a pelagic form (called an epitoke) that releases gametes (Pleijel and Rouse 2006). Reproductive modes among phyllodocids range from broadcast spawning to internal fertilization or pseudocopulation where females deposit eggs into gelatinous benthic masses. Although the reproduction and development of *E. lighti* is not known, *E. viridis* females deposit eggs (100 µm in diameter) into gelatinous masses under rocks and amongst algae, but this has not been observed in *E. longa* (eggs 80 µm in diameter) (Fernald et al. 1987; Crumrine 2001).
Larva: The development of other known *Eteone* species proceeds through trochophore and nectochaete stages where advanced larvae are large and predatory and usually collected near the bottom of plankton samples (Lacalli 1981; Fernald et al. 1987; Crumrine 2001). Of the local *Eteone* species, only the larvae of *E. longa* are known and can be identified from plankton samples (Thorson 1946; Blake 1975a; Crumrine 2001).

Juvenile: Sexual maturity in another *Eteone* species, *E. longa,* is reached at 20–30 mm in length (females reaching maturity at longer lengths) (Rasmussen 1956 in Fernald et al. 1987).
Longevity:
Growth Rate:
Food:
Predators: In Tillamook Bay, predators of *Eteone* species include *Hypomesus pretiosus* (surf smelt) in the lower bay and *Parophrys vetulus* (English Sole) in mid-bay (Forsberg et al 1977).
Behavior: *E. lighti* swim by utilizing their paddle-shaped parapodia.

Bibliography

1. BAKER, D., R. RUTOWSKI, and A. TALLMAN. 1970. Coos Bay Estuary Study Area B-4, B-5.
2. BANSE, K., and K. D. HOBSON. 1974. Benthic errantiate polychaetes of British Columbia and Washington. Fisheries and Marine Service, Ottawa, Canada.
3. BLAKE, J. A. 1975a. Phylum Annelida: Class Polychaeta, p. 151-243. *In:* Light's manual: intertidal invertebrates of the central California Coast. S. F. Light, R. I. Smith, and J. T. Carlton (eds.). University of California Press, Berkeley.
4. —. 1975b. The Larval development of polychaeta from the northern California Coast. III. Eighteen species of Errantia. Ophelia. 14:23-84.
5. —. 1992. New species and records of Phyllodocidae (Polychaeta) from the continental shelf and slope off California. Proceedings of the Biological Society of Washington. 105:693-708.
6. —. 1997. Family Phyllodocidae, p. 109-178. *In:* Taxonomic atlas of the benthic fauna of the Santa Maria Basin and the Western Santa Barbara Channel. Vol. 4. J. A. Blake, B. Hilbig, and P. H. Scott (eds.). Santa Barbara Museum of Natural History, Santa Barbara, CA.
7. BLAKE, J. A., and E. R. RUFF. 2007. Polychaeta, p. 309-410. *In:* Light and Smith manual: intertidal invertebrates from central California to Oregon. J. Carlton (ed.). University of California Press, Berkeley, CA.
8. CRUMRINE, L. 2001. Polychaeta, p. 39-77. *In:* Identification guide to larval marine invertebrates of the Pacific Northwest. A. Shanks (ed.). Oregon State University Press, Corvallis, OR.
9. FAUCHALD, K. 1977. The polychaete worms: definitions and keys to the orders, families, and genera. Natural History Museum of Los Angeles County Science Series. 28:1-190.
10. FERNALD, R. L., C. O. HERMANS, T. C. LACALLI, W. H. WILSON, JR, and S. A. WOODIN. 1987. Phylum Annelida, Class Polychaeta, p. 138-195. *In:* Reproduction and development of marine invertebrates of the northern Pacific coast. M. F. Strathmann (ed.). University of Washington Press, Seattle, WA.
11. FORSBERG, B. O., J. A. JOHNSON, and S. I. KLUG. 1977. Identification, distribution and notes on food habits of fish and shellfish in Tillamook Bay, Oregon. Oregon Department of Fish and Wildlife, s.l.
12. HARTMAN, O. 1936. A review of the Phyllodocidae (Annelida Polychaeta) of the coast of California, with descriptions of nine new species. University of California Publications in Zoology. 41:117-132.
13. —. 1968. Atlas of the errantiate polychaetous annelids from California. Allan Hancock Foundation, University of Southern California, Los Angeles.
14. KOZLOFF, E. N. 1974. Keys to the marine invertebrates of Puget Sound, the San Juan Archipelago, and adjacent regions. University of Washington Press, Seattle.
15. LACALLI, T. 1981. Annual spawning cycles and planktonic larvae of benthic invertebrates from Passamaquoddy Bay, New Brunswick. Canadian Journal of Zoology. 59:423-440.

16. PLEIJEL, F. 1991. Phylogeny and classification of the Phyllodocidae (Polychaeta). Zoologica Scripta. 20:225-261.
17. PLEIJEL, F., and G. W. ROUSE. 2006. Phyllodocida, p. 431-496. *In:* Reproductive biology and phylogeny of annelida. G. W. Rouse and F. Pleijel (eds.). Science Publications, Enfield, NH.
18. PORCH, L. L. 1970. Polychaetes of Coos Bay. *In:* OIMB Unpublished Student Report, Summer 1970.
19. RASMUSSEN, E. 1956. Faunistic and biological notes on marine invertebrates. Biologiske Meddelelser Kjobenhavn. 23:1-84.
20. THORSON, G. 1946. Reproduction and larval development of Danish marine bottom invertebrates, with special reference to the planktonic larvae in the sound (Oresund). Medd fra Komm Danmarks Fisk Havunder-sogelser Ser Plankton. 4:1-523.
21. WILSON, R. S. 1988. A Review of *Eteone* Savigny 1820, *Mysta* Malmgren 1865, and *Hypereteone* Bergstrom 1914 Polychaeta Phyllodocidae. Memoirs of the Museum of Victoria. 49:385-431.